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DEPRECIATION STUDY OF 1952 BUG

STRUCK ENGELMANN SPRUCE AT

J. NEILS LUMBER CO.

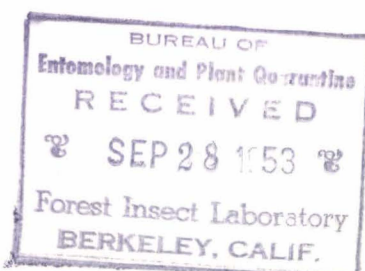
Report By

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Contents	Page
Silvicultural Character of Stand	1
Tree Quality	1
Stand Condition	2
Logging of Study Trees	3
Comparison Log Scale at Rexford Landing with Mill Deck Scale	4
Summary of Lumber Recovery	5
Comparison of Lumber Values	6
Facts of the Study	7

Approved as to Statement of
Fact By Committee:

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/s/ I. V. Anderson



Depreciation Study of 1952 Bug-Killed
Engelmann Spruce at the J. Neils Lumber Company

In June a committee representing the lumber industry, Bureau of Entomology and the Forest Service met and discussed plans for running a mill study on 1952 hit and dead trees. (Memorandum of June 11, 1953.)

J. Neils Company agreed to use their facilities to run the study.

Area selected by J. Neils and Kootenai Forest was the Upper West Fork of Pinkham Creek. (Section 31, T. 34 N., R. 27 W.)

The study trees were marked for cutting on the 27th of July by representatives of J. Neils, Kootenai Forest, Division of Timber Management, Forest Service, Bureau of Entomology and Forest Utilization Service, Forest Service, and Western Pine Association.

Silvicultural Character of Stand

Stand Composition

The stand was composed of 85 percent spruce, 10 percent alpine fir, and 5 percent larch.

Age

The age of the stand was 250 to 300 years of age.

Stocking

The stand on a volume basis was well-stocked. The volume per acre would be from 20 to 25 thousand feet per acre.

Site

The stand was classified as a good site according to forest survey standards.

Exposure and Slope

The exposure was to the east and north and slope was from 5 percent to 15 percent.

Tree Quality

Clear Logs

Thirty-one percent of the volume was from dead trees having one clear log.

Six percent of volume was from trees having two clear logs.

Size of Limbs

Sixty-six percent of the volume was from trees having medium limbs ($\frac{1}{2}$ -inch to 2-inch diameter next to the bole).

Thirty-four percent of the volume was from trees having coarse limbs (larger than 2-inch diameter next to the bole).

Volumes of Average Trees

The dead trees averaged 1,050 board feet volume each. This is equivalent to a 28-inch d.b.h. six-log tree. The green trees averaged 960 board feet or a 26-inch d.b.h. six-log tree. A tree was considered dead if the cambium around the entire circumference of the lower 8- or 10-foot portion of the butt log were dry and not functioning.

Stand Condition and Status of Test Trees

Because of the attack of spruce bark beetles in 1952 the spruce stand as observed on July 27, 1953, has been affected as follows:

Condition of Stand on Study Area

The volume of the trees studied was divided approximately as follows:

Thirteen percent of spruce trees were dead from 1952 attack. (Study trees came from this group.)

Two percent of spruce trees dead from 1951 attack.

Thirty percent of spruce trees were (twilight trees) hit in 1952 but not considered dead.

Fifty-five percent green spruce.

Condition of Needles

Foliage of test trees varied from those containing no needles at all to a few that had all their needles. The following tabulation gives needle retention based on number of trees studied.

1. 8 percent of trees had dropped 0 - 5 percent of their needles. 1/
2. 40 percent of trees had dropped 6 - 50 percent of their needles.
3. 34 percent of trees had dropped 51 - 95 percent of their needles.
4. 18 percent of trees had dropped 96 - 100 percent of their needles.

1/ Physiologically these trees were dead but still contained practically all green needles.

Woodpecker Work

The bole of each study tree was classified as to the percentage of its total area affected by woodpecker work.

25 percent of the number of trees had 0 - 5 percent of the bole affected.

74 percent of the number of trees had 6 - 50 percent of the bole affected.

1 percent of the number of trees had 51 + percent of the bole affected.

Ambrosia Beetles

Ambrosia beetle work was observed on 44 percent (by volume) of the trees.

Borers

Very few trees with borer work were observed.

Season Checks

Very little checking that would affect lumber grade was observed.

Logging

July 29 and 30 the selected trees were logged and each log marked with tree number and log number. Most of the logs were cut into long logs. These logs were trucked to Rexford where they were scaled by Forest Service scaler using standard scaling practice. After the logs were scaled they were loaded on cars and shipped to Libby.

Mill Study

The run of the test logs was made on August 4, 1953. In order to accomplish this study the mill ran only the test logs. To do this the resaw and two gang saws were not operated. Two single-cut band headrigs sawed the logs.

The mill ran at about half capacity for one shift.

Instructions to the scalers, sawmill men, graders and tallymen were as follows:

1. Deck scalers - Scale all logs to the present Forest Service practice of scaling spruce.
2. Sawyers, edgemen and trimmermen - Manufacture all lumber at present manufacturing practice with all defects due spruce bark beetle not considered (seasoning checks, holes and stain).
3. Board markers - Mark all boards containing bug defect across one end with a red crayon.
4. Board tallyman - Tally all marked bug boards 15 minutes out of every hour. If more than one defect is present mark the one first that will cause the most degrade.
5. Number one grader - Mark grades on all boards as if no bug defects were present.
6. Number one board caller - Call off to his tallyman a bug board or not a bug board, width, length for grades. Select, 2 common and 5 common.
7. Number two board caller - Call to his tallyman bug or not bug board by width and length for grades two and three common.
8. Number two grader - Grade all bug market boards on present dry grades. Consider all boards as need for ripping and trimming so as to recover the best grades.

Results of Mill Study

The following tables are a summary of the study.

Table 1. Comparison of Log Scale at Rexford Landing with Mill Deck Scale and Summary of Lumber Recovery and Overrun Percent.

<u>Log Scale (Scribner Decimal C)</u>	<u>Rexford Landing</u>	<u>Mill Deck</u>
Gross (feet)	66,040	70,010
Net (feet)	55,280	52,800
Percent defect	16.3	24.6
Number long logs per M (gross scale)	2.1	
(net scale)	2.6	
Number short logs per M (gross scale)		3.8
(net scale)		5.0
Percent (by net vol.) logs classed green <u>1/</u>		27.0
Percent (by net vol.) logs classed dead		73.0
Percent (by gross vol.) logs classed cull <u>2/</u>		8.0
Percent frequency defects occurred:		
Heart rot		30.0
Check		22.0
Stain		21.0
Sap rot		14.0
Heart Check		9.0
Borers		3.0
Break		1.0

Lumber Recovery

	<u>Grade Recovery</u>	
	<u>A <u>3/</u></u>	<u>B <u>4/</u></u>
3 common and better (feet)	57,268	52,228
Overrun over net deck scale (%)	8.5	-1.1
5 common and better (feet)	76,499	75,883
Overrun over net deck scale	44.9	43.7

- 1/ Green logs that came from the upper portion of dead trees and whose cambium had not yet dried out.
- 2/ Fifteen logs out of a total of 262 short logs scaled on mill deck were culls in comparison to 10 cull logs out of 142 long logs scaled at the Rexford Landing.
- 3/ Lumber manufactured and graded as if no bug defects existed.
- 4/ Lumber given final dry grade as nearly as possible with bug defects considered. It is recognized that further shrinkage and depreciation takes place which is impossible for any grader to consider in the green board.

Table 2. Total Footage of Lumber Recovered at Sawmill by Grades as Uninfluenced by Bug Defects and as Influenced by Bug Defects.

	D & Better		Common				Total 3 & Better		Common				Total 5 & Btr.
			2		3				4		5		
	BF	%	BF	%	BF	%	BF	%	BF	%	BF	%	BF
Grade Rec. A <u>1/</u>	18,144	23.7	13,333	17.5	25,791	33.8	57,268	75.0	13,322	17.3	5,909	7.7	76,499
Grade Rec. B <u>2/</u>	9,747	12.8	12,710	16.8	29,771	39.2	52,228	68.8	16,497	21.8	7,158	9.4	75,883
Increase or Decrease-Rec.B Compared to Rec. A	Decrease		Decrease		Increase		Decrease		Increase		Increase		Decrease
	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	Amt.	%	
	8,397	46.3	623	4.7	3,980	15.4	5,040	8.8	3,175	23.8	1,249	21.1	616

1/ A = Lumber manufactured and given a dry grade as if no defects due to spruce beetle existed.

2/ B = Lumber given final dry grade as nearly as possible, all defects due to spruce beetles considered.

Table 3. Comparison of Lumber Value from Grade Recoveries A & B 1/

	Select	Common				Total Value	Ave. Value Per M
	D & Btr.	2	3	4	5		
	\$	(\$)	(\$)	(\$)	(\$)	(\$)	(\$)
<u>Grade Rec. A</u>							
J. Neils Prices <u>2/</u>	2,812.32	1,510.76	2,145.04	931.74	223.47	7,623.33	99.65
Western Pine Assn. Prices <u>3/</u>	3,028.23	1,458.36	2,109.96	920.28	216.26	7,733.09	101.90
<u>Grade Rec. B</u>							
J. Neils Prices	1,510.78	1,440.17	2,476.05	1,153.80	270.72	6,851.52	90.29 <u>4/</u>
Western Pine Assn. Prices	1,626.77	1,390.22	2,435.57	1,139.61	262.20	6,854.37	90.33 <u>5/</u>

1/ A = Lumber manufactured and graded as if no defects due to spruce beetle existed.

B = Lumber given final dry grade as nearly as possible with defects due to beetles considered.

2/ Includes adjustment for underweights and is based on sales average for May 1953 adjusted for price changes to August 1, 1953.

3/ Sales average for sales reported by Western Pine Association from Jan. 1, 1952, to June 30, 1953 and compiled by the Forest Service.

4/ Based on J. Neils prices loss in value per M because of bug depreciation is \$9.36 or 9.2 percent depreciation.

5/ Based on Western Pine Association price loss in value per M because of bug depreciation is \$11.57 or 11.6 percent depreciation.

Facts of the Study

1. Grade recovery B for the select grade was 12.8 percent as compared to Western Pine Association average 5.6 percent. Logs were larger and better quality than regional average except too many cull logs were brought to the Rexford landing.
2. Forty-six and three tenths percent falldown in select was due to bug defect.
3. Grade recovery B. Overrun for short logs for 3 common and better - 1.1 percent.
4. Eight percent of volume of gross deck scale was logs classified by deck scalers as cull.
5. Average value after degrade was \$90.33. If cull logs had been left in woods 4 to 6 percent more value would be realized from the lumber.
6. Shrinkage and depreciation combined due to bug defect amounted to approximately 10 percent of the theoretical dry shipping value of the lumber.

Participants in Study

J. Neils Lumber Co.

Mike Schoknecht

Helped with marking and select area.

Jack Parish

Helped with marking.

Orlo Johnson

Scaled on deck.

A. J. Agather

Helped set up mill study and coordinated flow of material in mill.

Pete Peterson

No. 2 grader.

Len Holman

No. 1 grader.

Brad Philips

Board caller.

Percy Baker

Tallyman and compiler.

Western Pine Association

Hanley Morse

Marked in woods - tallyman of defect at Libby.

Kootenai Forest

Tom Smith

Scaler at Rexford.

Ted Hay

Marker in woods.

Ray Carr

Marker in woods.

Max Aiken

Marker in woods.

Al McGraw

Scaler at deck, Libby.

Bureau of Entomology

Jim Evenden

Helped set up study. Marked in woods.

Timber Management

Clarence Brown

Helped set up study. Marked in woods. Tally at mill and compiled data.

Forest Experiment Station

I. V. Anderson

Director of study. Marked in woods. Board caller, Libby.